

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of: Richard J. McCann	)	
Serial Number: 10/772136	)	GAU: 3724
Filed: February 4, 2004	)	
For: Locking Folding Knife with Gas Spring	)	
	)	Examiner: Landrum, Edward F.
Not. of Appeal Filed: November 10, 2006	)	
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January 8, 2007

To the Board:

**APPEAL BRIEF**

On Appeal from the Final Office Action dated August 11, 2006, please consider the following Brief:

**Real Party in Interest**

The real party in interest is the Applicant: Richard J. McCann. This invention/application has not been assigned.

**Related Appeals and Interferences**

There are no related appeals or interferences known to the appellant or the appellant's legal representative which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending matter.

**Status of the Claims**

Claims 1 and 2 are pending. The rejection of claims 1 and 2 is appealed.

**Status of Amendments**

No amendments were filed subsequent to final rejection.

### **Summary of Claimed Subject Matter**

The invention is a hand-held folding pocket knife which uses a compressible gas spring to bias a bolt or latch member into a blade-locking position. The gas spring includes a movable wall that partially defines a substantially sealed, variable volume chamber containing a gas. Such a gas spring is not subject to fatigue or breakage and is unlikely to be affected by corrosion or adverse environmental conditions. It is believed that a gas spring has never before been used in a folding knife.

### **Grounds of Rejection to be Reviewed on Appeal**

1. Whether claims 1 and 2 are unpatentable under 35 U.S.C. 103(a) as being obvious over Collins (US 4,451,982) in view of Poehlmann (US 5,964,035). That is, does Poehlmann teach replacement of the coil spring shown in Collins with a gas spring comprising a movable wall that partially defines a substantially sealed, variable volume chamber containing a gas wherein movement of the latch member from the locked position to the unlocked position causes the movable wall to reduce the volume of the chamber, thereby compressing the gas to create spring force against the latch member, as specified in the claims?

### **Grouping of Claims**

The appealed claims stand and fall together.

### **Argument**

#### **Claims 1 and 2 are nonobvious over the prior art.**

Applicant presents herewith the Declaration of the Inventor and Applicant, Richard J. McCann. Additionally, Applicant presents the Declarations of Charles W. Karwan, Patrick D. Covert, and Charles Cutshaw, as well as the Statements<sup>1</sup> of John A. Larsen and Kim Breed, all of whom are well-known knife designers or critical writers. Each of them attest to the

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<sup>1</sup> Authenticated in the Declaration of Richard J. McCann.

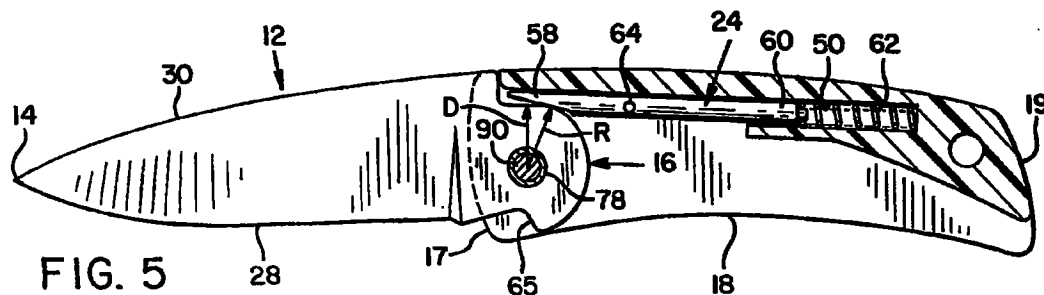
uniqueness of the use of a gas spring (as claimed) to solve the problems known to be associated with traditional springs for decades. This evidence was before the Examiner. The Examiner failed to give this evidence of long felt, unfilled need proper consideration as objective evidence of nonobviousness.

### **Graham v. Deere Analysis**

A determination of obviousness under section 103 is based on the factual inquiries set forth in *Graham v. John Deere Co.*<sup>2</sup>: (a) the scope and content of the prior art; (b) the differences between the prior art and the claims at issue; (c) the level of ordinary skill in the art; and (d) objective evidence of nonobviousness.

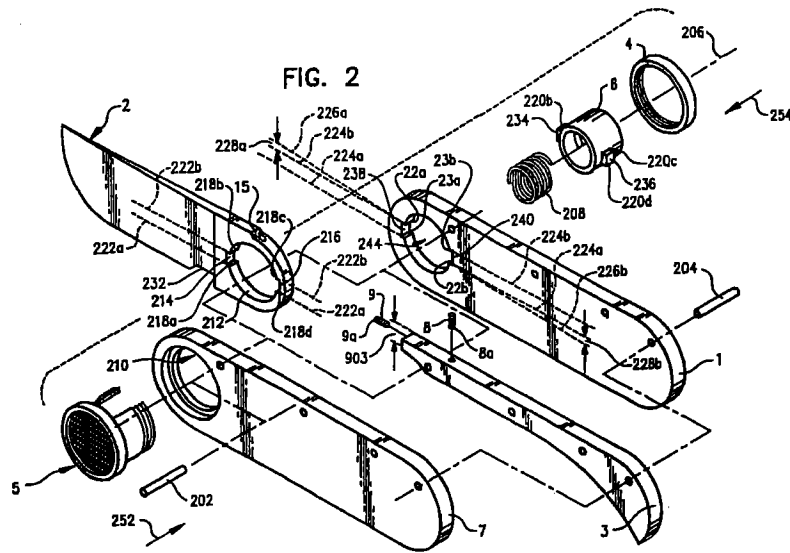
### **Scope and Content of the Prior Art**

Collins teaches a folding knife that locks in the open position with a spring-biased bolt that can be manually retracted to allow the blade to pivot into a closed position. The illustrated embodiment shows the bolt 24 to be in the form of an elongated rod which is biased by an axially-aligned coil compression spring 62.



<sup>2</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. 459, 467 (1966).

In a “kitchen sink” paragraph near the end of the best mode section, where it is routinely stated that any and every part could be substituted with anything else that would still be functional, Poehlmann states simply: “A biasing or urging means other than helical spring 208 can be provided such as a compression spring, a leaf spring, a resiliently deformable plastic or other material and/or hydraulic or pneumatically-forced systems.” Column 8, lines 31-35. Poehlmann does not disclose *any* example of “a resiliently deformable plastic or other material” or *any* structure that would or could function as “hydraulic or pneumatically-forced systems.” Additionally, Poehlmann does not suggest an *advantage* to using one of the vaguely-described alternatives over the disclosed helical spring embodiment or how such an alternative might be combined into the very different bolt lock knife of Collins. Because this suggestion of an



advantage is lacking in the prior art, the presently-claimed combination is nonobvious. *See, In re Sernaker*, 217 U.S.P.Q. 1, 6 (Fed. Cir. 1983) (“The lesson of this case appears to be that prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings.”)

Although Wirges et al. (US 4,240,619), cited by the Examiner in the record but not relied upon, describes the apparatus it discloses as a “gas spring,” its functions are those of a damper and a stay. Specifically, it has a fixed volume cylinder 1 that is divided into two chambers 8, 9 by a piston 3. *See* Column 2, line 68 – column 3, line 3. An elastomeric, axially-displaceable piston ring 18 acts as a valve to limit the flow of gas from one chamber to the other (the combined volumes being fixed, not variable) so as to dampen extension or retraction movement of the piston rod 2. The apparatus does not replace the function of a coil or leaf spring to bias another member in a particular direction. Instead, it permits a “lid or other movable structural member to be held fast in any portion of its path of movement on a support.” *See* column 1, lines 55-57. Thus, it functions as a stay rather than as a biasing means.

### **The Differences Between the Prior Art and the Claims at Issue**

The claims specify, in addition to a handle, movable blade, and latch member, that the gas spring comprises “a movable wall that partially defines a substantially sealed, variable volume chamber containing a gas” and that movement of the latch member “causes the movable wall to reduce the volume of the chamber, thereby compressing the gas to create spring force against the latch member.”

Contrary to the Examiner’s assertion, Collins does not state at column 3, lines 31-33, that any type of spring would work provided it fit into chamber 50. It states merely: “[a] spring or

other biasing mechanism 62, retained within chamber 50, urges the bolt 24 toward the first end 17 of the handle.” The chamber 50 is in no way disclosed or suggested to be a sealed cylinder or variable volume pressure chamber.

Neither Collins nor Poehlmann teach “a movable wall that partially defines a substantially sealed, variable volume chamber containing a gas” nor that movement of the bolt or latch member “causes the movable wall to reduce the volume of the chamber, thereby compressing the gas to create spring force against the latch member.” Moreover, Wirges et al. does not supply this missing disclosure.

As explained in the Declaration of Richard McCann, metal springs must be made of the proper material and be properly tempered in order to be both flexible and resilient, while also not being too brittle so that they break nor too soft so that they quickly fatigue. This can be particularly critical in very small springs that cannot simply be “over engineered” to exceed minimum specifications due to space limitations. Any metal spring has a finite life because flexing always causes fatigue. Terminal fatigue can manifest as either a loss of resiliency or as a crack that propagates to the point of breakage, resulting in mechanical failure.<sup>3</sup> Flexing metal springs in locking folding knives are subject to corrosion and to obstruction by dirt and other debris, including ice. A traditional approach to this problem has been to either permanently lubricate or enclose the springs to minimize the detrimental effects.

The application on which the Collins patent is based was filed more than 25 years ago and issued 22 years ago. Despite the availability of this design and the known limitations of metal springs, no one prior to the present inventor has substituted a gas spring into this design in

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<sup>3</sup> See also Declarations of Karwan, Covert, and Cutshaw.

order to overcome this known shortcoming.<sup>4</sup>

Because hydraulic fluid (of any type) is, by definition, not compressible, it is inconceivable how a “hydraulic spring” could be constructed<sup>5</sup>. Poehlmann certainly does not disclose such a machine. Moreover, Poehlmann’s vague and bare reference to a “pneumatically-forced system” does not provide sufficient direction to modify Collins to include “a movable wall that partially defines a substantially sealed, variable volume chamber containing a gas” and that movement of the latch member “causes the movable wall to reduce the volume of the chamber, thereby compressing the gas to create spring force against the latch member” as presently claimed.

### **Level of Skill in the Art**

A person of ordinary skill in the art is also presumed to be one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate, whether by patient, systematic research or by extraordinary insights.<sup>6</sup> A person of ordinary skill in the art of knife design is likely to be a general machinist with little specialized training in knife design, but with several years of hands-on experience and who has studied knife designs for many years.<sup>7</sup> The present inventor, Richard J. McCann, is no different in this regard. It was, however, only after many years of experience in knifemaking that he assembled parts that had been within his (and all other knifemakers’) capability to make for decades. From a patentability standpoint, and

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<sup>4</sup> See Declarations of McCann, Karwan, Covert, Cutshaw, and Statements of Larsen and Breed.

<sup>5</sup> See Declaration of Richard J. McCann.

<sup>6</sup> *Standard Oil Co. v. American Cyanamid Co.*, 227 U.S.P.Q. 293, 298 (Fed. Cir. 1985).

<sup>7</sup> See Declarations of McCann and Karwan.

contrary to the Examiner's assertion to the contrary, it is important to note that that which is within the capabilities of one skilled in the art does not equate with obviousness. "There is nothing in the statutes or the case law which makes 'that which is within the capabilities of one skilled in the art' synonymous with obviousness."<sup>8</sup>

### **Objective Evidence of Nonobviousness**

Objective evidence of nonobviousness includes, but is not limited to, (a) commercial success of the claimed invention, (b) long felt but unsolved needs, and (c) failure of others.<sup>9</sup> When evidence of these "secondary considerations" is properly presented, it **cannot be ignored** in connection with the determination of obviousness<sup>10</sup> and **failure to consider it is clearly error**.<sup>11</sup> The presence of such evidence can be the most probative evidence of nonobviousness available and helps to avert the trap of hindsight.<sup>12</sup> The absence of objective evidence is a "neutral factor."<sup>13</sup> These "secondary considerations" **require** a finding of nonobviousness if the matter is otherwise doubtful.<sup>14</sup>

#### **i. Commercial Success**

Commercial success often does not play a large part in the analysis of obviousness in the

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<sup>8</sup> *Ex parte Gerlach and Woerner*, 212 U.S.P.Q. 471 (PTO Bd. App. 1980).

<sup>9</sup> *Graham*, 383 U.S. at 17-18, 148 U.S.P.Q. at 467.

<sup>10</sup> *In re Sernaker*, 217 USPQ 1, 7 (Fed. Cir. 1983).

<sup>11</sup> *Custom Accessories Inc. v. Jeffrey-Allan Industries Inc.*, 1 U.S.P.Q.2d 1196, 1199 (Fed. Cir. 1986).

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

<sup>14</sup> *In re Sernaker*, 217 U.S.P.Q. at 7.

PTO because an inventor often waits until his patent issues before he swing his production into full gear.<sup>15</sup> Mr. McCann only recently began sales of a limited production of this knife under the trademark Foldair™. These limited production knives are being sold for \$400 and several have been sold at this price.<sup>16</sup> Standard production knives of this design are being sold for approximately \$200. It is of particular interest to users that the spring cannot fatigue from use, is a closed cylinder so corrosion is not a factor, and, because there is no bending action at all, it cannot break.<sup>17</sup>

This knife was shown in 2006 at an international trade show and generated substantial interest among collectors, enthusiasts, and writers.<sup>18</sup> Mr. Steve Shackleford, editor of *Blade*, the world's number one knife publication, and *Blade Trade* magazine, interviewed Mr. McCann and inspected/photographed the knife for a review in an upcoming issue. Neither Mr. Shackleford nor any of the attendees at the trade show inspecting the knife indicated ever having known of a locking knife to use a closed gas-filled piston cylinder unit as a gas spring in place of the standard coil or leaf spring that has been in use for as long as locking folding knives have been in existence.<sup>19</sup> Interest in featuring this invention in *Blade* magazine is echoed by the statement of Field Editor, Kim Breed.<sup>20</sup>

Despite these (and subsequent) sales, as well as the high level of interest in the trade,

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<sup>15</sup> *Id.*

<sup>16</sup> See Declaration of McCann.

<sup>17</sup> See Declarations of McCann, Karwan, Covert, Cutshaw, and Statements of Larsen and Breed.

<sup>18</sup> See Declaration of McCann.

<sup>19</sup> *Id.*

<sup>20</sup> See Statement of Kim Breed.

commercial success is not the primary argument in support of the secondary considerations of nonobviousness in this case. Nor, importantly, is it the only objective evidence of nonobviousness.

**ii. Long Felt But Unsolved Need**

Objective evidence of long felt but unsolved need is very strong in this case and was completely ignored by the Examiner. Despite bolt-action locking knives being known in the art for more than 20 years, as evidenced by Collins, and despite the widely-known technology of a simple gas spring being available for at least as long, no one has heretofore made the combination of these elements nor suggested doing so **in the presently-claimed manner** in order to overcome known shortcomings of the prior art.<sup>21</sup> This is strong objective evidence of a long-felt need being unsolved by others' inventions and is substantiated by the several declarations and statements of persons skilled in the art that are submitted herewith. Each of the declarants, who are persons of at least ordinary skill in the art – all skilled, successful and highly regarded knifemakers and writers – attests to the uniqueness, novelty, and nonobviousness of Mr. McCann's invention. Each of the declarants specifically reference the aspect of the knife that is unique – the use of the gas-filled closed piston/cylinder to provide the biasing force to lock the blade – is what has filled a long felt need in the art to replace springs that are subject to breakage and/or fatigue and *is the subject of the present claims and which is directly attributed by each of the declarants.*

With respect to the Examiner's argument that it would have been obvious to have modified Collins to incorporate the teachings of Poehlmann to create a biased locking

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<sup>21</sup> See Declarations of McCann, Karwan, Covert, Cutshaw, and Statements of Larsen and Breed.

mechanism that did not rely on a coil spring to supply a biasing force, he asserts, without support, that a “coil spring and a gas spring are equivalent structures and would only require routine skill in the art to change from one to the other.” Again, this is premised on hindsight and is not the appropriate legal standard. Additionally, in discounting the objecting evidence of nonobviousness filed by the Applicant, the Examiner argues that the declarations fail “to provide convincing reasons that indicate Collin’s knife as modified above is *not capable of performing the same function* as the folding knife of the instant invention” (emphasis added). Once again, this is a rejection premised solely on inappropriate hindsight and relies on an improper legal standard. Further, the Examiner argues that the declarations fail “to provide convincing reasons why Collin’s folding knife *cannot be modified* by Poehlmann’s *disclosed pneumatic spring*” (emphasis added). Again, whether it is possible to modify a device in the prior art is not the appropriate legal standard and, furthermore, Poehlmann does not provide *any* enabling disclosure of a pneumatic spring.

The Examiner erroneously states that there is “no connection between the claims of the instant invention and the alleged evidence which is provided in the declaration(s)” and uses this as a false excuse to disregard Applicant’s substantial evidence. Specifically, the

**Declaration of Charles W. Karwan** states:

In my expert opinion, based on my extensive experience with the design, use, and evaluation of knives, that McCann’s design using a gas spring is a completely unique application and is not an obvious combination of known parts.

In spite of the known limitations of metal springs, and my general knowledge of gas springs for many years, I am not aware of anyone prior to Richard McCann’s doing so, who has substituted a gas spring into a knife design in order to overcome these well-known shortcomings.

This is direct evidence of long felt and unsolved need tied directly to the claimed aspects of the invention which was ignored by the Examiner. Next, the **Declaration of Patrick D. Covert** states:

In my opinion, based on my experience with design and making knives, McCann's design using this gas spring is unique and, although appearing very simple in hindsight, is not an obvious combination of known parts.

Despite the common knowledge of a retractable bolt knife design for at least 20 years, the known limitations of metal springs, and the general knowledge of gas springs, I am not aware of anyone, prior to Richard McCann's doing so, who has substituted a gas spring into this common knife design in order to overcome this known shortcoming.

The **Declaration of Charles Q. Cutshaw** states essentially the same thing, again tying the nonobviousness of the design directly to limitations specified in the claims. **John A. Larsen** states:

At no time in the past 40 years, or during my 10 years as a knife writer have I seen a locking mechanism for a folding blade knife that in any way resembles the McCann Industries locking system. In my opinion this locking system is unique and unlike any other locking system that I have knowledge [of].

Since making this statement, Mr. Larsen authored an article published in the January 2007 edition of *Tactical Knives* magazine lauding the uniqueness of the gas spring of Mr. McCann's knife. Because this article was not previously available, it was not in the record before the Examiner and, therefore, is not in the record before the Board. The statement of **Kim Breed** states:

In 15 years of testing and evaluations for Blade Magazine I have never seen a design like yours. It takes all of the worry of having a spring failure on a knife away.

Again, the uniqueness of the design is attributed directly to a claimed feature.

The Examiner erroneously focused only on commercial success as objective evidence of nonobviousness and completely ignored the other types of evidence identified by *Graham*: long felt but unsolved need and failure of others. Evidence of these secondary considerations has been properly presented and specifically references aspects of the invention specified in the claims. This evidence cannot be ignored<sup>22</sup> and failure to consider it is clearly error.<sup>23</sup> As instructed by the Federal Circuit, the presence of this type of evidence is the most probative of evidence of nonobviousness available and helps to avert the trap of hindsight<sup>24</sup>, which is the fatal flaw of the Examiner's rejection. Absent evidence to the contrary, rather than mere unsupported assertions of the Examiner, this objective evidence of secondary considerations require a finding of nonobviousness.<sup>25</sup>

This case also may be closely analogous to the situation which was before the Supreme Court in *Eibel Process Company v. Minnesota & Ontario Paper Co.*<sup>26</sup> and the Court of Customs and Patent Appeals in *In re Conover*<sup>27</sup>. In the *Eibel* case, it was the discovery that the unequal speeds of stock and wire produced a defective paper product under high machine speed because of the disturbance and ripples some ten feet from the discharge. In the *Conover* case, it was the discovery that roller bearings were being destroyed by heat generated by galling of the bearing

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<sup>22</sup> *In re Sernaker*, 217 USPQ at 7.

<sup>23</sup> *Custom Accessories Inc.*, 1 U.S.P.Q.2d at 1199.

<sup>24</sup> *Id.*

<sup>25</sup> *In re Sernaker*, 217 USPQ at 7.

<sup>26</sup> 261 U.S. 45 (1923)

<sup>27</sup> 134 U.S.P.Q. 238 (CCPA 1962)

surfaces that led to the claimed plating of one of the surfaces with a metal having non-galling characteristics. Here, as in the *Eibel* and *Conover* cases, the invention is not the mere use of a known technique to remedy a known source of trouble, but is, as explained by Chief Justice Taft, “the discovery of the source not before known and the application of the remedy” for which Applicant here seeks to be rewarded by the grant of a patent<sup>28</sup>. Here, as in *Eibel* and *Conover*, once the problem has been correctly identified and the proper solution applied, the solution, in hindsight, would *seem* obvious. Hindsight is not, however, the proper test of patentability.

### **Conclusion**

The Examiner’s rejection of Claims 1 and 2 is based wholly on hindsight. Poehlmann does not adequately disclose how one would construct a gas spring comprising a movable wall that partially defines a substantially sealed, variable volume chamber containing a gas such that movement of a latch member from the locked position to an unlocked position causes the movable wall to reduce the volume of the chamber, thereby compressing the gas to create spring force against the latch member, as specified in the claims. Furthermore, the Examiner has ignored substantial objective evidence of nonobviousness in the form of declarations and statements of several highly-skilled experts in the field of knife making. Accordingly, the Examiner’s rejection should be reversed and the pending claims allowed.

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<sup>28</sup> See 134 U.S.P.Q. at 240.

Respectfully submitted,

Richard J. McCann

By: 

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## Claims Appendix

1. A knife, comprising:

a handle;

a blade movably secured to the handle so that the blade is movable along a path of travel between a closed position and an open position;

a latch member movable between a locked position in which it extends into the path of travel of a portion of the blade thereby preventing movement of the blade and an unlocked position in which it does not interfere with movement of the blade;

a gas spring positioned to bias the latch member into the locked position, the gas spring comprising a movable wall that partially defines a substantially sealed, variable volume chamber containing a gas; and

wherein movement of the latch member from the locked position to the unlocked position causes the movable wall to reduce the volume of the chamber, thereby compressing the gas to create spring force against the latch member.

2. A folding knife, comprising:

a handle having a pivot shaft;

a blade movably secured to the handle so that the blade is pivotable about the pivot shaft along a path of travel between a closed position and an open position;

a latch member movable between a locked position in which it extends into the path of travel of a portion of the blade thereby preventing pivotal movement of the blade and an unlocked position in which it does not interfere with pivotal movement of the blade;

a gas spring positioned to bias the latch member into the locked position, the gas spring comprising a movable wall that partially defines a substantially sealed, variable volume chamber containing a gas; and

wherein movement of the latch member from the locked position to the unlocked position causes the movable wall to reduce the volume of the chamber, thereby compressing the gas to create spring force against the latch member.

### **Evidence Appendix**

Attached are the Declaration of the Inventor and Applicant, Richard J. McCann. Additionally, Applicant presents the Declarations of Charles W. Karwan, Patrick D. Covert, and Charles Cutshaw, as well as the Statements (authenticated in the Declaration of Richard J. McCann) of John A. Larsen and Kim Breed, all of whom are well-known knife designers or critical writers.

### **Related Appeals Appendix**

Not applicable.

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Appl. No.	: 10/772,136	Confirmation No. 4260
Applicant	: McCann, Richard J.	
Filed	: February 4, 2004	
TC/AU	: 3724	
Examiner	: Landrum, Edward L.	
Docket No.	: 104841.1	
Customer No.	: 23828	

**DECLARATION OF RICHARD J. McCANN**

1. I, Richard J. McCann, am the named inventor in the above-identified pending patent application.
  
2. I am generally experienced as a machinist, particularly with respect to gunsmithing and knife making. I am schooled in mechanics, hydraulics, pneumatics and tool and cutter grinding as part of an aircraft-oriented machinist apprenticeship.
  
3. I have been designing, manufacturing, and selling knives for at least 10 years. I am very familiar with others' designs of folding, locking knives, all of which use some form of leaf or coil spring to bias a member into position to lock the blade.
  
4. A person of ordinary skill in the art of knife design is likely to be a general machinist with little or no specialized training in knife design, but with several years of hands-on experience.
  
5. Bending springs, whether leaf or coil, made of metal or any other material are susceptible to fatigue and/or breakage, resulting in mechanical failure.
  
6. Metal springs must be made of the proper material and be properly tempered in order to be both flexible and resilient, while also not being too brittle so that they break nor too

soft so that they quickly fatigue. This can be particularly critical in very small springs that cannot be “over engineered” to exceed minimum specifications due to space limitations. Any metal spring has a finite life because flexing always causes fatigue. Terminal fatigue can manifest as either a loss of resiliency or as a crack that propagates to the point of breakage, resulting in mechanical failure

7. Flexing metal springs in locking folding knives are subject to corrosion and to obstruction by dirt and other debris, including ice. A traditional approach to this problem has been to either permanently lubricate or enclose the springs to minimize the detrimental effects.

8. Despite the availability of the knife design shown in the Collins patent and the known limitations of metal springs, I am not aware of anyone prior to my doing so who has substituted a gas spring into this design in order to overcome this known shortcoming.

9. Hydraulic fluid (or any liquid) is by definition not compressible. It is inconceivable how a “hydraulic spring” could be constructed. The Poelhmann patent certainly does not disclose how such a device could be constructed. Poelhmann’s bare reference to a “pneumatically-forced system” does not provide sufficient direction to me or any person of ordinary skill in knife design to modify the knife shown in the Collins patent to make the knife of my claimed invention.

10. I only recently began sales of a limited production run of 100 of this knife. These limited production knives are being sold for \$400. I have sold 7 of these knives. Standard production knives of this design are expected to sell for approximately \$200. They are shown and available on my website: <http://www.mccannindustries.com/knives/foldair/foldair.html>

11. It is of particular interest to purchasers that the spring cannot fatigue from use, is a closed cylinder so corrosion is not a factor, and, because there is no bending action at all, it

cannot break.

12. I recently displayed my knife at my company's booth (McCann Industries) at an international trade show held in Los Vegas, Nevada, on February 9-12, 2006. This show (known as the Shooting, Hunting and Outdoor Trade Show, or SHOT Show) is the largest annual exhibition of this type which includes booths from dozens of knife manufacturers. My knife, known as the Foldair™, generated substantial interest among collectors, enthusiasts, and writers. Mr. Steve Shackleford, editor of *Blade*, the worlds number one knife publication, and *Blade Trade* magazine, interviewed me and inspected/photographed the knife for a review in an upcoming issue. Neither Mr. Shackleford nor any of the hundreds of attendees at the trade show inspecting the knife indicated ever having known of a locking knife to use a closed gas-filled piston cylinder unit as a gas spring in place of the standard coil or leaf springs that have been in use for as long as locking folding knives have been in existence.

13. The Statement of Kim Breed (submitted herewith) was personally given to me and known to be personally signed by him. Mr. Breed has been testing and evaluating knives as a Field Editor of *Blade* magazine for 15 years and has expressed an interest, echoing that of Mr. Shackleford, to feature this unique knife in this leading publication. He attests to the fact that knife users experience breakage of coil and leaf springs and that the claimed aspects of my invention provide a solution this long-felt need.

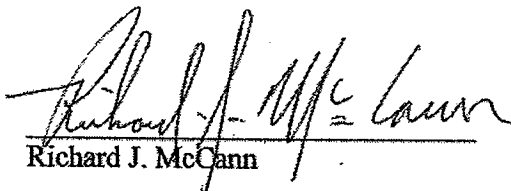
14. The Statement of John A. Larsen (submitted herewith) was personally given to me and known to be personally signed by him. He has been a Contributing Editor to *Tactical Knives* magazine for over 10 years and knife collector for more than 40 years. He attests to the fact that the locking mechanism of my invention is unique and nonobvious.

15. The aspect of the knife that is unique – the use of the gas-filled closed

piston/cylinder to provide the biasing force to lock the blade – is what has filled a long felt need in the art to replace springs that are subject to breakage and/or fatigue and is the subject of the present claims.

The undersigned, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and that such willful false statements may jeopardize the validity of any patent resulting from this application, declares that the facts set forth above are true; all statements made of my own knowledge are true; and all statements made on information and belief are believed to be true.

Date: 6-13-06

  
Richard J. McCann

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To: THE UNITED STATES PATENT AND TRADEMARK OFFICE

From: Charles W. Karwan

Subject:

Appl. No. : 10/772,136

Confirmation No. 4260

Applicant : McCann, Richard J.

Filed : February 4, 2004

TC/AU : 3724

Examiner : Landrum, Edward L.

Docket No.: 104841.1

Customer No. : 23828

#### DECLARATION

1. I am a full time writer on several topics including cutlery with regular columns in TACTICAL KNIVES and SAFARI magazines covering knives of a wide variety. I have written hundreds of articles and columns on knives in magazines and have contributed to several books on cutlery topics.

2. In addition I have been a consultant to several knife manufacturers and have been designing knives and knife mechanisms for approximately eleven years.

3. My formal education, training, and background in this field is covered in my CV in Annex A of this correspondence.

4. I am quite familiar with virtually all of the designs of folding knives with locking mechanisms that incorporate some form of metallic spring to lock the blade into the open position.

5. I am very aware of the weaknesses of metallic springs used in the locking functions of folding knives. These include spring fatigue where the spring loses its force or completely fails (breaks) and have observed such failure on numerous occasions. In addition iron based metallic springs are susceptible to corrosion, which can also result in spring failure.

6. I am also quite familiar with the design and operation of gas springs in the form of a sealed piston unit filled with a gas wherein the compressibility of the gas supplies the force for the piston assembly to function as a spring.

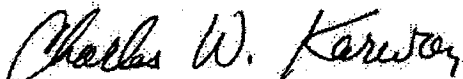
7. I am also very familiar with Richard McCann's locking, folding knife design and its use of a gas spring instead of a common metallic spring to supply the force required to operate its locking mechanism.

8. In my expert opinion, based on my extensive experience with the design, use, and evaluation of knives, that McCann's design using a gas spring is a completely unique application and is not an obvious combination of known parts.

9. In spite the known limitations of metal springs, and my general knowledge of gas springs for many years, I am not aware of anyone prior to Richard McCann's doing so, who has substituted a gas spring into a knife design in order to overcome these well known shortcomings. In my opinion, McCann's application of a gas spring to a knife's locking mechanism results in a knife that overcomes the known weaknesses of metallic leaf and coil springs in this application to an extremely high degree and constitutes a substantial improvement in knife design.

10. The undersigned, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, declares that the facts set forth above are true; all statements made of my own knowledge are true; and all statements made on information and belief are believed to be true.

Date: May 18, 2006



Charles W. Karwan

Annex A:

Charles W. Karwan  
958 Cougar Creek Road  
Oakland, Oregon 97462  
(541) 459-4134  
cwkarwan@earthlink.net

**CURRICULUM VITAE**  
Qualifications As Expert On Firearms and Cutlery

**EDUCATION**

1. 1969 Graduate of the United States Military Academy, West Point with a Bachelor of Science degree in Military Engineering with emphasis on Ordnance Engineering (weapons design).
2. Honor Graduate (top three in class) of U. S. Army Ranger School where I was taught the combat use a variety of weapons including firearms, knives, and bayonets.
3. Graduate of the U. S. Army Special Forces Officer's Course where I received training on a wide variety of foreign and domestic military firearms as well as knives and bayonets.
4. Graduate of the U. S. Army Airborne School, Jump Master's Course, the Infantry Officer Basic and Advanced Courses, the Jungle School, and the Air Ground Operations School.
5. Graduate of the Glock Inc. Firearms Instructor's Workshop.
6. Graduate of the Glock Inc. Armorer and Advanced Armorer Courses.
7. Graduate of the Oregon Firearms Academy combat handgun course (Glock).
8. Graduate of the North West Safari Clipit Course that teaches how to use a folding knife as a defensive weapon.

**MILITARY EXPERIENCE**

9. Nine years active duty as a commissioned officer in Infantry and

Special Forces all at operational detachment or company level with constant intimate contact, use, and training involving the use of a wide variety of foreign and domestic firearms and cutlery.

10. While in Special Forces assignments received training in the combat use of firearms, knives, and bayonets from some of the top military instructors in the country and frequently served as an instructor myself.

11. During a one year tour to Vietnam, served as a platoon leader, executive officer, and company commander of an infantry rifle company in combat where I both used and observed being used the standard combat firearms of the U. S. military of the time as well those of our enemies. I also received extensive field combat experience in the use of a wide variety of cutlery including both weapons and tools.

12. Achieved EXPERT qualifications with the M1911A1 pistol. the M14 rifle, the M16 rifle, and the M60 machine gun.

#### INDUSTRIAL EXPERIENCE

13. Twenty-six years writing about firearms and cutlery in a wide variety of periodicals including: GUN WORLD, SOLDIER OF FORTUNE, GUNS & AMMO, GUNS, AMERICAN HANDGUNNER, SHOOTING INDUSTRY, FIGHTING FIREARMS, GUNS AND WEAPONS FOR LAW ENFORCEMENT, FIGHTING KNIVES, TACTICAL KNIVES, and many others.

14. Authored two books on firearms: COMBAT HANDGUNNERY 2nd edition and COMBAT HANDGUNNERY 3rd edition.

15. Contributing to numerous books on firearms and knives including: the GUN DIGEST 1999, FIREARMS DIGEST 2001, GUNS ILLUSTRATED, 2000 STANDARD CATALOG OF FIREARMS, KNIVES '98, '99, and 2000, KNIVES DIGEST 1, and many more.

16. Contributing editor and columnist in TACTICAL KNIVES magazine since its introduction to the present and SAFARI magazine for the last three years.

17. Paid consultant to the cutlery industry,

18. Designer and co-designer on a wide variety of firearm and knife designs and mechanisms.

19. Former part time Federally Licensed Firearms Dealer and gunsmith for over fifteen years.

#### LEGAL EXPERIENCE

20. Expert on firearms and cutlery with Technical Advisory Service for Attorneys (TASA) since 1984.

21. Have testified in court as an expert on both firearms and cutlery and have helped lawyers prepare cases involving firearms and cutlery in many more cases. Have also been recognized as an expert on both firearms and cutlery by the Canadian courts.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/772,136 Confirmation No. 4260  
Applicant : McCann, Richard J.  
Filed : February 4, 2004  
TC/AU : 3724  
Examiner : Landrum, Edward L.  
  
Docket No. : 104841.1  
Customer No. : 23828

DECLARATION

1. My name is Patrick D. Covert.
2. I am the Knife Editor of American Handgunner magazine.
3. I have been writing articles about knives for at 14 years.
4. My training is book author and freelance journalist.
5. My formal education and training in this field is college education and 20 years as an author and journalist.
6. I am very familiar with others' designs of folding, locking knives, all of which use some form of leaf or coil spring to bias a member into position to lock the blade.
7. Bending springs, whether leaf or coil, made of metal or any other material are susceptible to fatigue and/or breakage, which can result in mechanical failure.
8. I am familiar with the design and operation of a gas spring in the form of a sealed piston/cylinder unit and have been for many years.
9. I am familiar with Richard McCann's locking, folding knife design. It includes a handle, a movable blade, a latch member, and a gas spring. The gas spring includes a movable

wall (piston) that partially defines a substantially sealed, variable volume chamber (cylinder) containing a gas and the movement of the latch member causes the movable wall to reduce the volume of the chamber, thereby compressing the gas to create spring force against the latch member.

10. In my opinion, based on my experience with designing and making knives, McCann's design using this gas spring is unique and, although appearing very simple in hindsight, is not an obvious combination of known parts.

11. Despite the common knowledge of a retractable bolt knife design for at least 20 years, the known limitations of metal springs, and the general knowledge of gas springs, I am not aware of anyone, prior to Richard McCann's doing so, who has substituted a gas spring into this common knife design in order to overcome this known shortcoming.

The undersigned, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, declares that the facts set forth above are true; all statements made of my own knowledge are true; and all statements made on information and belief are believed to be true.

Date: 5/23/06

Name: Patrick D. Covert

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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Filed :	February 4, 2004	
TC/AU :	3724	
Examiner :	Landrum, Edward L.	
Docket No. :	104841.1	
Customer No. :	23828	

**DECLARATION**

1. My name is Charles Q. Cutshaw
2. I am a journalist specializing in technical analysis of firearms and knives.
3. My have been evaluating firearms and knives for at least five years.
4. My training is technical intelligence in the analysis of infantry weapons of all types, including firearms, ammunition and edged weapons.
5. My formal education and training in this field is MS in Strategic Intelligence and 20 + years experience with the US Government evaluating firearms, ammunition and edged weapons.
6. I am very familiar with others' designs of folding, locking knives, all of which use some form of leaf or coil spring to bias a member into position to lock the blade.
7. Bending springs, whether leaf or coil, made of metal or any other material are susceptible to fatigue and/or breakage, which can result in mechanical failure.
8. I am familiar with the design and operation of a gas spring in the form of a sealed piston/cylinder unit and have been for many years.

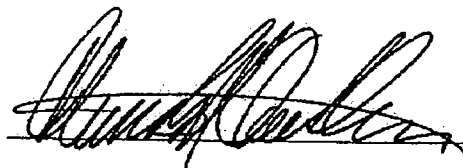
9. I am familiar with Richard McCann's locking, folding knife design. It includes a handle, a movable blade, a latch member, and a gas spring. The gas spring includes a movable wall (piston) that partially defines a substantially sealed, variable volume chamber (cylinder) containing a gas and the movement of the latch member causes the movable wall to reduce the volume of the chamber, thereby compressing the gas to create spring force against the latch member.

10. In my opinion, based on my experience with evaluating knives, McCann's design using this gas spring is unique and, although appearing very simple in hindsight, it is not an obvious combination of known parts to my knowledge and belief.

11. Despite the common knowledge of a retractable bolt knife design for at least 20 years, the known limitations of metal springs, and the general knowledge of gas springs, I am not aware of anyone, prior to Richard McCann's doing so, who has substituted a gas spring into this common knife design in order to overcome this known shortcoming.

The undersigned, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, declares that the facts set forth above are true; all statements made of my own knowledge are true; and all statements made on information and belief are believed to be true.

Date: 12 June 2006



Charles Q. Cutshaw

05-03-06

S-T-A-T-E-M-E-N-T

This statement is in support of the McCann Industries unique blade locking mechanism.

I have been a Contributing Editor to Tactical Knives magazine for over 10 years and have written approximately 100 knife articles. As well as the actual knives I have written about I have weekly contact with other knife writers who discuss with me the knives they are writing about. In addition I have attended numerous knife shows and am well familiar with the folding knives of the industry giants such as Spyderco, Benchmade, Gerber, Camillus, Kershaw, and Ontario Knife companies. I have been a knife collector for over 40 years and have numerous knives in my personal collection.

At no time in the past 40 years, or during my 10 years as a knife writer have I seen a locking mechanism for a folding blade knife that in anyway resembles the McCann Industries locking system. In my opinion this locking system is unique and unlike any other locking system that I have knowledge of.

Sincerely,



JOHN A. LARSEN  
818 Glen Oaks Dr E  
Spanaway, WA 98387-7974  
(253) 846-1675  
johmalarsen@aol.com

15 May 06

To: Richard McCann  
Fm: Kim Breed

Subject: New folder

Richard,  
In 15 years of testing and evaluations for Blade Magazine I have never seen a design like yours. It takes all of the worry of having a spring failure on a knife away. I really like the idea of using brass in the piston. This will stop the corrosive effect of rusting that plagues other knives that use traditional spring material.

I would really like to do an article in Blade Magazine on this knife. I know that knife users worldwide would be interested in it. They are tired of having to send their knives back for coil or leaf spring breakage. Keep up the great work and I look forward to future correspondence.

Best wishes;



Kim Breed  
Field Editor  
Blade Magazine

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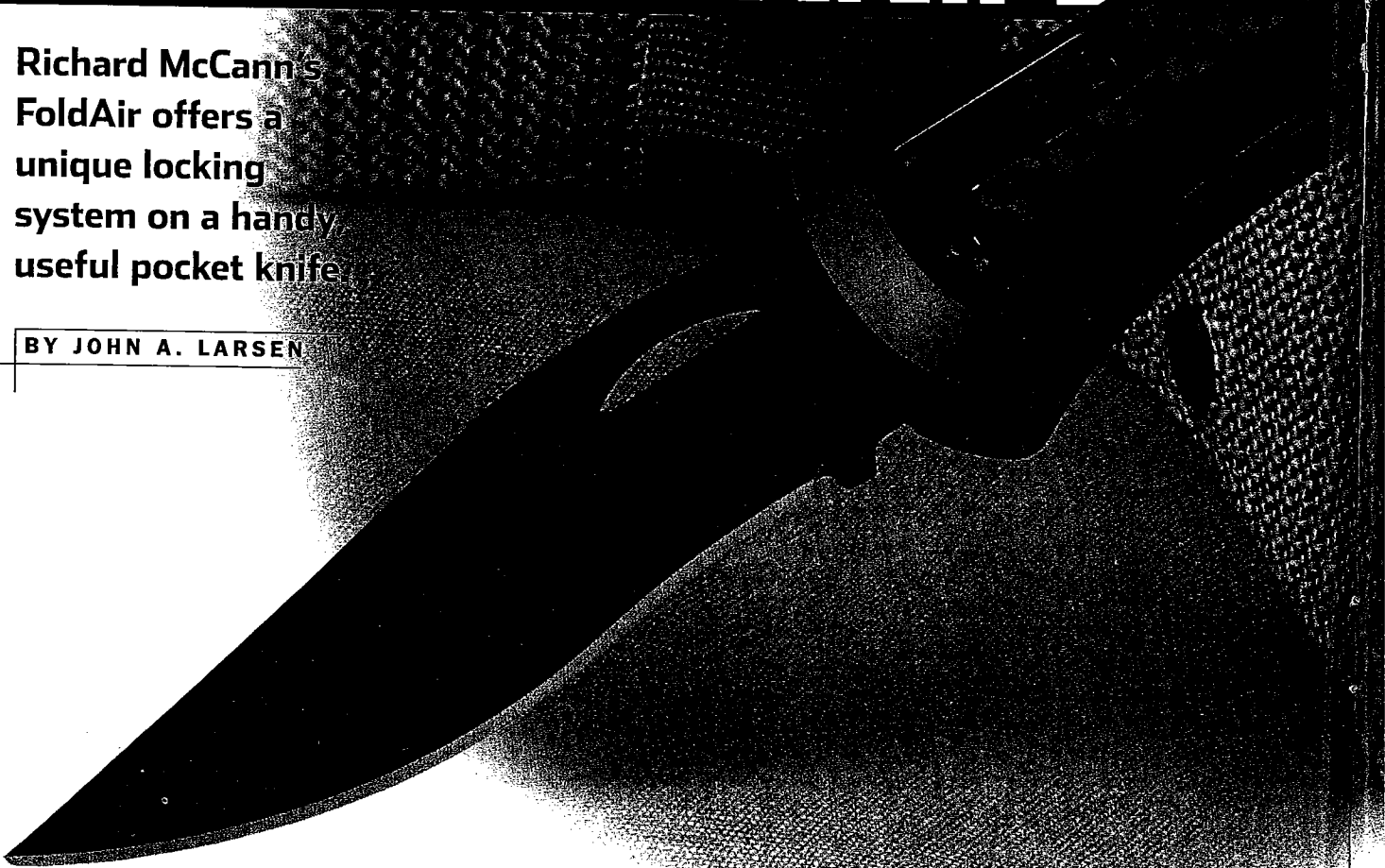


Display Until Nov. 27, 2005

# THE AIR-LOCK POCKET KNIFE

Richard McCann's  
FoldAir offers a  
unique locking  
system on a handy,  
useful pocket knife.

BY JOHN A. LARSEN



**B**ack in 2000 when I was researching an article on Richard McCann's Puffin fixed blade, the maker asked me if I thought there were any new ways to make a locking system for a folder. I, in my naïveté, said no.

It took McCann just a few weeks to prove me wrong. However, it was only recently that I had the chance to evaluate McCann's first production versions of the "FoldAir" pocketknife.

The FoldAir has a 3.5-inch-long, clip-pointed, recurved-edge blade made out of O1

(HRC 56). The blade has what McCann calls the VHG (Variable Hollow Grind) that is done on a CNC machine. With the exception of the screws, McCann makes all parts for the FoldAir in house.

The handle is 4.75 inches long, .5-inch thick and approximately 1 inch wide, and is made from aluminum (7075T6511, double stress-relieved, aircraft aluminum) with a black carbon fiber insert. The carbon fiber reminds me of jeweling you see on high-priced hunting rifle bolts. The handle has a lanyard hole in the butt, and a relatively short pocket clip on the right side of the handle; and you can get the aluminum handle in either black or green.

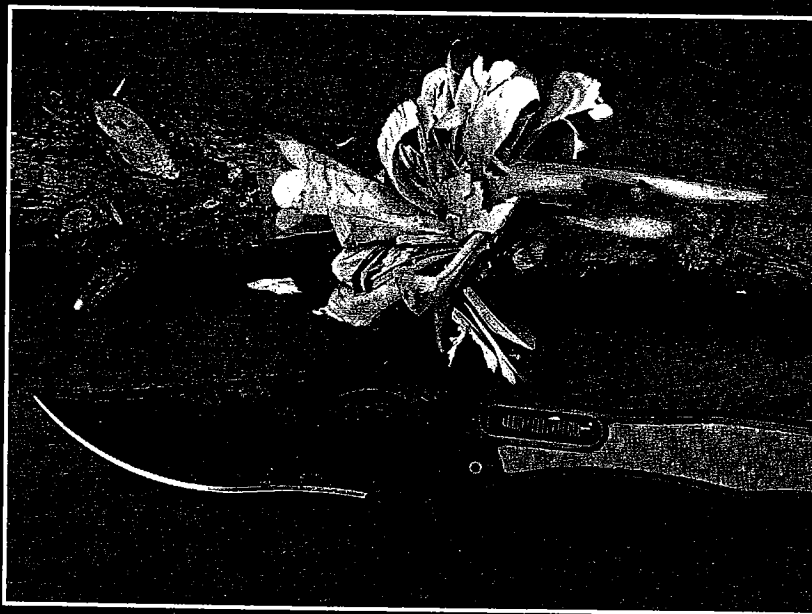
Overall length of the FoldAir open is 8 3/8 inches, and it weighs about 4.75 ounces.

### Locking System

So what is different about the FoldAir's locking system? To start with, it has no springs; therefore it will never suffer spring fatigue. Basically, it is a 3/16-inch-diameter brass cylinder, about 1.75 inches long, which has a "self holding taper," and is filled with nitrogen. Why nitrogen? The reason is because it has the largest molecules in this class of inert gases. McCann got the inspiration from the system that allows his shop door to close gently. The one in his shop has been in use over 20 years and, assuming only 10 openings a day, that is some 73,000 cycles. He feels his knife will last equally long.

By pulling the grooved bolt above the pivot pin to the rear using your thumb and forefinger, you can release the blade, but if you do not do this, the blade is locked open. To be honest, I was not convinced it would work, or that it was strong enough, until I saw an ATV suspended from the FoldAir. McCann drilled a hole about 1 inch from the pivot pin in both the blade and handle, inserted two snap links (blade edge up, so the weight was trying to close the blade), hooked the entire contraption to a winch, and then picked up a Honda 400EX ATV that has a dry weight of 375 pounds (it wasn't dry!). They did not pick up the ATV once, or twice or three times, but a total of five times! Nothing I did could get the system to fail.

A sharp edge and excellent geometry are evident in the way this pine branch is feathered.



## Testing

The next morning I stuck the FoldAir in my pocket and took it with me while walking our dog through the woods. We were ahead of our normal rainfall this year, and with the weather warming up, those ever-invasive blackberry bushes were crowding onto my walking trails. I flipped open the FoldAir and was pleasantly surprised to learn that it could cut through about a 5/8-inch-thick blackberry cane with just a single flick of the wrist. Thin branches, thick, it did not seem to matter; hit the branch at a 45-degree angle and the FoldAir did its job.

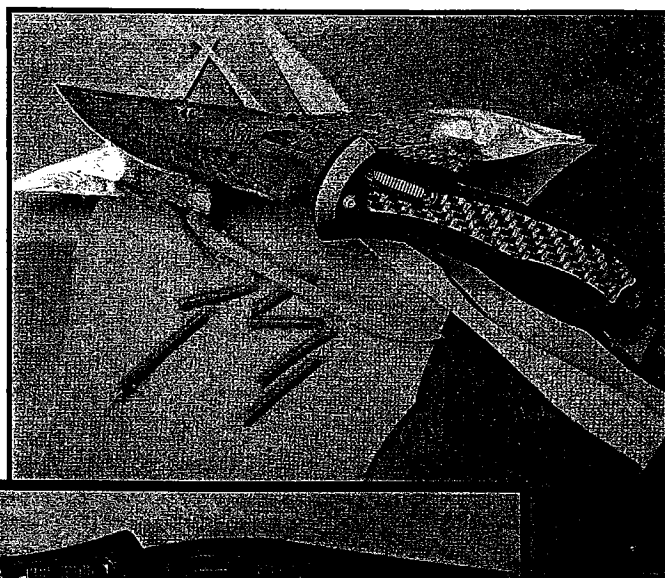
Returning home, I tried cutting one of those hard bamboo chopsticks and again was happy to see that the FoldAir cut cleanly and deeply with very little effort. Based on the performance of other knives I have tested this way, I would have to rate the FoldAir's performance as very good.

Next, I tried cutting into a seasoned pine branch about 1.5 inches thick and the VHG continued to bite deeply and cleanly. Later, I touched up the edge on an oval ceramic stick. Incidentally, when the FoldAir would no longer cleanly shave hair off my arm, it still would efficiently cut wood, which I attribute to the good geometry of the VHG.

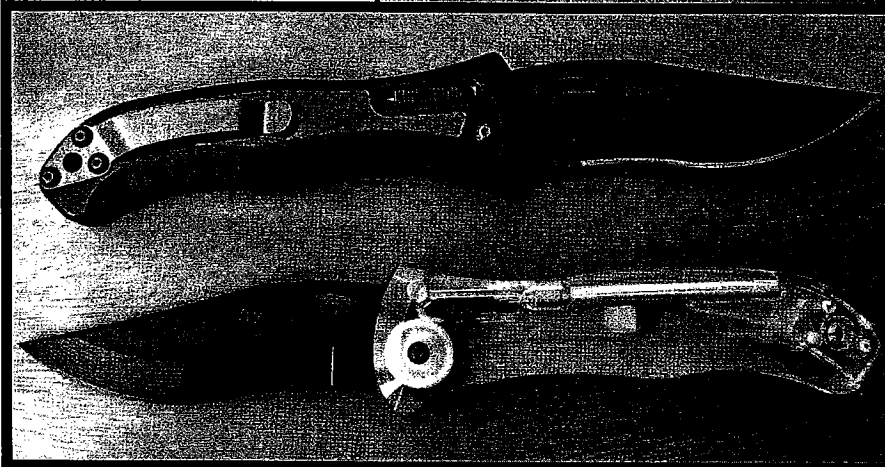
I next tried cutting some soft tomatoes but found the FoldAir was no longer biting into a cut well. It would still slice paper cleanly so I was a little puzzled. I think the ceramic left too smooth an edge, so I grabbed my EZE-LAP dual diamond hone and, using the medium side, gave the FoldAir four strokes per side. After that, the FoldAir had no problem cutting those soft tomatoes; it just needed some "teeth" on the edge.

After cutting up a respectable amount of cardboard and some heavy leather scraps, I tried cutting through some heavy electrical wire. I would snap cut into the wire, but could not completely cut through. Using the same spot on the blade, I would push down, twisting the blade back and forth until the knife cut through the wire. After cutting through about a half dozen times, I inspected the edge and found no indication of damage or deformation of the edge. Next, I chopped and cut through a large number of branches, deliberately trying to chop out knots in the wood, again with no damage evident, and finished up cutting points on the ends of the branches; the VHG of the FoldAir continued to perform.

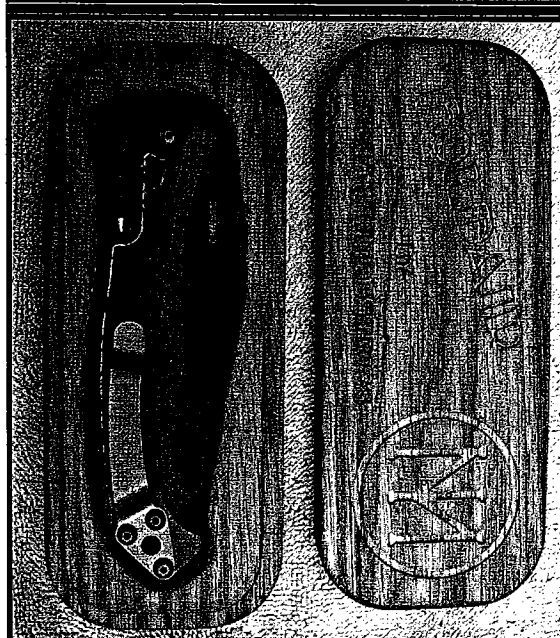
After cutting up considerable cardboard, heavy leather, then the FoldAir was used to cut through heavy copper wire. No damage was done to the edge and the excellent VHG geometry made cutting points on a dried pine branch a cinch.



A side view of the FoldAir tested and a clear handle model to show the layout of the unique locking system.



**“McCann got the inspiration from the system that allows his shop door to close gently. The one in his shop has been in use more than 20 years. He feels his knife will last equally long.”**



The FoldAir comes in a classy oak box, made, of course, on a CNC machine.

Since the blade is O1, I was interested in how it would do corrosion wise, so when I was done cutting up those tomatoes, I did not wipe off the blade. The next morning there was a little rust in several sections of the edge, but a couple of swipes on my EZE-LAP diamond hone and they were gone. The parkerized area of the blade showed no evidence of any rust, nor did I see any throughout the test period. Parkerization not only protects the blade but also provides a matrix that better holds any oil you might use on the blade, but for the test I did not oil the blade.

I found that the FoldAir's handle was quite comfortable

and provided a safe, secure grip. The release mechanism for the locking system was also easy to use; it only took me a short while to get used to it. You just use your thumb and forefinger to pull back on the bolt, insuring you pull equally on both sides of the bolt. This releases the blade, which will now fold down. I suggest you do it with the FoldAir pointed down slightly, about a 45-degree angle. Once the blade folds down, rotate the knife and use your thumb to complete closing the blade.

The FoldAir is a point-up carry, but so far I have had no problems with it opening in my pocket, and due to the locking system and

**“The release mechanism for the locking system was also easy to use; it only took me a short while to get used to it.”**

shape of the handle, I don't think it will. I was interested in how the FoldAir would penetrate, but instead of my normal phone book test, McCann showed me what he does. He put a 2-foot-square piece of .5-inch-thick plywood on the floor of his shop, and then from a height of 3 feet, threw his own FoldAir into the plywood. Not only did it go completely through the .5-inch plywood, it also stuck at least .25-inch into the linoleum. I know this as I first tried to slide the plywood across the floor and it would not move, then I had to pull it up out of the floor.

The bottom line is that as far as I can tell, the FoldAir locking system works, and works well. This unique locking design, coupled with its performance, makes the FoldAir a winner in my opinion. I also know a fair amount of knife users prefer carbon steel blades, again the FoldAir comes through. Tough and efficient with a unique and strong locking system, you should check out the FoldAir if you are looking for a pocket knife you can depend on. Price is \$200 plus S&H.

TK

## For More Information

**MCCANN INDUSTRIES**

P.O. Box 641, Dept. TK

Spanaway, WA 98387; (253) 537-6919

[www.mccannindustries.com](http://www.mccannindustries.com)

The clear demo model with the components of the locking system, beneath the FoldAir (L to R) the bronze blade Bearing and a Delrin Washer. On top (L to R) blade Axle, blade Stop Pin, Derlin washer, release Bolt, and air (Nitrogen) cylinder.

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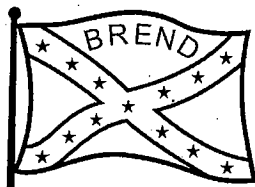
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